

H19

Notice of Allowability

Application No.

10/789,091

Examiner

James J. Leybourne

Applicant(s)

PAI ET AL.

Art Unit

2881

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☐ This communication is responsive to _____.
2. ☒ The allowed claim(s) is/are 1-24.
3. ☐ The drawings filed on 27 February 2004 are accepted by the Examiner.
4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|--|
| 1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____. |
| 3. <input checked="" type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____ | 7. <input type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____. |

DETAILED ACTION

Allowable Subject Matter

1. Claims 1-24 are allowed.
2. The following is an examiner's statement of reasons for allowance:
3. Regarding independent claim 1, the prior art fails to disclose or make obvious an apparatus, comprising: a semiconductor or dielectric wafer-substrate, a first multi-layer structure being located over the wafer-substrate and including one of an ionizer and an electronic ion detector; and a second multi-layer structure being located over the wafer-substrate and including an ion trap wherein the one of an ionizer and an electronic ion detector has a port coupled to one of the ports of the ion trap.

Regarding independent claim 11, the prior art fails to disclose or make obvious an apparatus comprising: a first semiconductor or dielectric wafer-substrate comprising a first multi-layer structure thereon, the first multi-layer structure having one of an ionizer and an electronic ion detector therein, and a second semiconductor or dielectric wafer-substrate comprising a second multi-layer structure located thereon, the second multi-layer structure having an ion trap with entrance and exit ports and wherein the one of an ionizer and an electronic ion detector has a port coupled to one of the ports of the ion trap.

Regarding independent claim 19, the prior art fails to disclose or make obvious a method, comprising: fabricating a first multi-layer structure for an array of ionizers or

electronic ion detectors on a wafer-substrate, depositing a layer of sacrificial material on the first multi-layer structure, planarizing the layer of sacrificial material, fabricating a second multi-layer structure comprising an array of ion traps over the planarized layer of sacrificial material; and then, removing the sacrificial material.

Regarding independent claim 22, the prior art fails to disclose or make obvious a method, comprising: fabricating a multi-layer structure for an array of ionizers or electronic ion detectors on a first wafer-substrate, fabricating a multi-layer structure comprising an array of ion traps on a second wafer-substrate; and then, putting the wafer-substrates together such that ports of the ion traps are coupled to ports of the ionizers or electronic ion detectors.

Claims 2-10, 12-18, 20-21 and 23-24 are allowed by virtue of their dependency on claims 1, 11, 19 and 22 respectfully.

The main feature that separates the apparatus and method apart from prior art is fabricating a multi-layer structure of ion traps on a wafer-substrate that is placed in proximity to a multi-layer structure comprising of an ion emitter or an ion detector.

4. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance"

Relevant Prior Art

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The following patents are cited to show further show the state of the art with respect to miniature mass spectrometers fabricated on a substrate:

USPN 5735720 to Gärtner et al.

USPN 6870158 B1 to Blain

USPN 541408 to Sittler.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James J. Leybourne whose telephone number is (571) 272-2478. The examiner can normally be reached on M-F 9:00- 6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John R Lee can be reached on (571) 272-2477. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

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you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

June 30, 2005

JJL



NIKITA WELLS
PRIMARY EXAMINER

07/01/05